NON-PUBLIC?: N
ACCESSION #: 9108070231
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Seabrook Station PAGE: 1 OF 3

DOCKET NUMBER: 05000443

TITLE: Reactor Trip Due to Reactor Coolant System Low Flow
EVENT DATE: 07/04/91 LER #: 91-009-00 REPORT DATE: 08/02/91

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Allen L. Legendre, Lead Engineer - TELEPHONE: (603) 474-9521
Compliance, Extension 2373

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On July 4, 1991, at 8:25 a.m. a reactor trip with a turbine generator trip occurred while the plant was at 100% power. The reactor trip was initiated due to low flow in Reactor Coolant System (RCS), loop 3.

The initiating event was caused by an electrical fault in a bus bar. This bus bar is located in the electrical terminal connector box for Reactor Coolant Pump (RCP) "C". As a result of the electrical fault, RCP "C" tripped due to protective relaying action. A reactor trip with a turbine generator trip occurred as designed, due to low flow in Reactor Coolant System loop 3. Subsequent to the reactor trip, a Main Feedwater Isolation occurred due to high-high steam generator water level spikes. In addition, an Emergency Feedwater Actuation occurred due to the feedwater isolation.

The root cause for the electrical fault was determined to be a

quarter-inch bolt that was missing from the top access cover plate of the electrical terminal connector box. Additionally, the gasket for this cover plate had pulled away from the connector box, The missing bolt and loose gasket created a direct path for dirt and moisture to enter the electrical terminal connector box which caused the electrical fault, The top access cover plate is not ordinarily used for maintenance. There is no history of this cover plate ever being unbolted since it was originally installed, therefore, it is believed that the bolt was never installed.

The subject gasket and bolt were replaced and an inspection of the cover plates for the three remaining RCPs was conducted to ensure that all the required bolts were installed and that the gaskets were intact. Additionally, the electrical terminal connector boxes for the three remaining RCPs will be inspected during the first refueling outage for signs of moisture and dirt intrusion.

END OF ABSTRACT

On July 4, 1991, at 8:25 a.m., EDT, a reactor trip with a turbine generator trip occurred while the plant was at 100% reactor power. The reactor trip was initiated due to low flow in Reactor Coolant System (RCS), loop 3.

Description of Event

Prior to the event, the plant was at 100% power, with plant systems in a steady state condition. The initiating event was caused by an electrical fault in a bus bar. This bus bar is located in the electrical terminal connector box for Reactor Coolant Pump (RCP) "C". As a result of the electrical fault, RCP "C" tripped due to protective relaying action. A reactor trip with a turbine generator trip occurred as designed, due to low flow in Reactor Coolant System, loop 3.

Following the reactor trip and the turbine trip a Main Feedwater Isolation occurred. Pressure pulses were created by the rapid closure of the turbine control valves. These pressure pulses were transmitted through the steam flow transmitters' water filled lines and sensed by the high pressure side of the steam generator narrow range level transmitter. This resulted in the steam generator high-high level signal and resultant feedwater isolation. Actual steam generator levels did not approach the high-high level setpoint at any time. Additionally, an Emergency Feedwater Actuation occurred as designed, due to the feedwater isolation.

Additionally, during the repair work in the electrical terminal connector box, it was discovered that the bus joint covers (boots) for' the power cable to terminal bus connections were not installed. The boots provide phase to phase insulation so the strike distance between phases is increased. It was determined that the missing boots were not the cause of the electrical fault and may not have prevented the fault if they had been installed; however, they may have minimized the damage to the bus bar. The cause for the missing boots is unknown at this time. It is believed that the boots were not installed during the original installation of the pump motor.

Safety Consequences

There were no adverse safety consequences as a result of this event. All the applicable trips and interlocks associated with the reactor trip functioned as designed.

All operator actions were determined to be appropriate to ensure the safety of the plant. At no time during this event was there any impact on the health and safety of plant employees or the public.

Root Cause

The root cause for the electrical fault has been attributed to a missing quarter-inch bolt from the top access cover plate of the electrical terminal connector box for Reactor Coolant Pump "C". Additionally, the gasket for this cover plate had pulled away from the connector box. However, it is not known if the gasket pulled away before the event or because of the event. The combination of the missing bolt and loose gasket allowed a direct path for dirt and moisture to enter the electrical terminal connector box which caused the electrical fault. The top access cover plate is not ordinarily used for maintenance. There is no history of this cover plate ever being unbolted since it had been installed. Therefore, it is believed that the bolt was never installed.

Corrective Actions

After the trip, the plant was placed in HOT STANDBY in accordance with operating procedure OS1000.11 "Post Trip to Hot Standby". An event evaluation and post trip review were immediately initiated. A Human Performance Evaluation System (HPES) analysis as well as a root cause analysis were also initiated.

The missing boots were replaced and the gasket and bolt were replaced on

RCP "C". An inspection of the cover plates for RCPs "A", "B" and "D" determined that the required bolts were installed and that the gaskets were intact.

The electrical terminal connector boxes for RCPs "A", "B" and "D" will be inspected for signs of moisture and dirt intrusion and to ensure that the boots are installed. This inspection is currently scheduled to be completed during the first refueling outage.

Plant Conditions

At the time of this event, the plant was in Mode 1, Power Operation at 100%, with an RCS temperature of 587 degrees Fahrenheit and pressure of 2,235 psig.

This is the first event of this type at Seabrook Station.

New Hampshire
Yankee Ted C. Feigenbaum
President and
Chief Executive Officer

NYN-91123

August 2, 1991

United States Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

Reference: Facility Operating License No. NPF-86, Docket No. 50-443

Subject: Licensee Event Report (LER) No. 91-009-00: Reactor Trip Due to Reactor Coolant System Low Flow

Gentlemen:

Enclosed please find Licensee Event Report (LER) No. 91-009-00 for Seabrook Station. This submittal documents an event which occurred on July 4, 1991, and is being reported pursuant to 10CFR50.73(a)(2)(iv).

Should you require further information regarding this matter, please contact Mr. Allen L. Legendre, Lead Engineer - Compliance, at (603)

474-9521, extension 2373.

Very truly yours,

Ted C. Feigenbaum

TCF:WJT/ssl

Enclosures: NRC Forms 366, 366A

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